

Choosing a Signal Processor

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Signal processing systems fall into three general categories. It is important to appreciate the differences in order to make a sensible selection.

Function-Specific

Function-specific processors are usually designed to perform a single version of a complete processing function. These systems, when developed and debugged, very often maximize performance per dollar. Unfortunately, they often result from the observation: "It's simple; we just throw together a few integrated circuits and . . .". Sadly, the result is usually functionally rigid, obsolescent, and has cost a great deal to engineer.

Algorithm-Specific

Algorithm-specific processors are designed to perform individual algorithms of general usefulness, such as Fast Fourier Transforms. This category really consists of partial systems, since these processors must be combined with either a function-specific processor or a computer. Thus it is clear that the algorithm-specific processor, like the function-specific processor, is an inherently rigid approach.

General-Purpose

General-purpose processors are systems whose functions are programmed rather than wired. The most flexible of the three, they combine the advantage of standard hardware with a multiple function capability. Such a system may be used for any algorithm: Fourier transforms, digital filtering, correlations, convolutions, cepstra, amplitude histograms, signal averaging, spectral densities, or statistical analyses. It can also accomplish the many odd jobs peculiar to a non-specific environment: comparison, peripherals handling, display, threshold sets, adaptation, and decision-making.

Each category has its place and its most useful applications. Since you know your own requirements better than anyone else, it is practical to do your own evaluating. After each category has been considered against the application, selection will be nearly automatic.

A CASE IN POINT:

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